EDUCATIONAL STUDY

Evaluation of the Current Health Information Management and Technology Program: Students and Faculty Perspectives

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Abstract

Objectives

To evaluate the Health Information Management and Technology (HIMT) program, based on the views of students and faculty of the College of Applied Medical Science, University of Dammam, Kingdom of Saudi Arabia.

Methods

The Target population of this cross-sectional study was all fourth year students and full-time faculty members of HIMT at the College of Applied Medical Science, University of Dammam, Kingdom of Saudi Arabia. Two different types of questionnaires were used.

Results

The highest mean score in the students' survey went to all subscales (Instructor, Perception of learning, Students cooperation, Supportive learning environment), except Course and Learning Resources. Nearly half the faculty wanted both 'individual interviews' and 'faculty colleague classroom visits and observations' to be used by the department to obtain information on their performance. However, they complained about inadequate actual departmental support.

Conclusion

All participants were satisfied with the HIMT program, but with some reservation. It is hoped that information from this study would enhance the HIMT program and improve student learning.

Key words: Assessment, Educational program, Health information management and technology, Learning environment.

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Introduction

Educational researchers are in agreement that the evaluation of an academic program is as an important process in improving program quality and achieving students' learning as well as supporting strategic planning; decision making processes, demonstrate the achievements of the program and ultimately provide information about whether intended learning outcomes are being achieved[1-3].

Assessment has been variously defined based on different theoretical backgrounds and methodologies. However, a general definition states that it is a "systematic collection and analysis of information to improve students' learning"[1]. The University of Central Florida has thus related the outcome measures to its definition of program assessment as a "systematic and ongoing method of gathering, analyzing, and using information from measured outcomes to improve student learning"[4].

Different methods for program evaluation include, but are not limited to, a survey of students in the program, alumni, employers, and faculty driven assessment method[1,4]. In addition, Smith emphasized that capstone courses survey, and exit surveys were among the most common assessment methods used in higher education[1].

Program evaluation is considered effective if it is designed around the department's mission statement, reflects the educational values of the program, measure the student's ability to transfer knowledge into the workplace to form a continuum. It should be systematic, ongoing, cumulative, and multi-faceted to include all stakeholders whose role in the learning process is significant such as students, graduates, faculties, administrators, and employers[1,2]. It also should take into consideration the graduates' perceptions of the benefits they derive from that program[5].

One of the main aspects that should be included in academic program evaluation process is the learning environment[2]. Previous studies have suggested that providing students with a supportive learning environment might induce them to use more desirable learning strategies which in turn might affect their learning outcome. The main dimensions of an effective learning context includes good teaching, freedom in learning, openness to students, reasonable workload, good social climate in the department, formal teaching methods, clear goals and standards of assessment. The course should be relevant to the students' future careers, the teaching approach have practical application, explanations clear and students actively involved in class discussions[6,7]. These are factors to be considered during the evaluation of an educational program.

In summary, students viewed their educational environment as positive and effective when the teaching was relevant, practical, and interactive.

One of the key stakeholders in the learning process is the faculty. A good faculty/ teacher has been characterized as one who is able to provide effective feedback, is enthusiastic, has good rapport with students, and makes an attempt to understand students' problems/difficulties. S/he should be concerned, caring, helpful, and deliver the learning material at a level that is suitable for the students[8-13]. In a recent study a good teacher in a clinical setting was viewed by faculty and students as one who possessed not only teaching skills but also professional, personal, and social skills. Some of these roles require discipline/course proficiency, while others require personal contact with students[14].

Nevertheless, a good teacher's role is not only that of a provider of information but also a role model at work/teaching, a facilitator of learning, a mentor, student and curriculum assessor, curriculum and course planner, a resource creator, and a producer of a study guide[15]. In summary, teachers should perform these different roles effectively in order to enhance students' learning process.

With regard to Kingdom of Saudi Arabia, every aspect of higher education is undergoing a tremendous change from curriculum and teaching techniques to the adaptation of new methods in assessing

learning. This is mainly due to the changes enforced by the accrediting agency, namely, the National Committee for the Academic Accreditation and Assessment (NCAAA). One of the initial requirements of the NCAAA is the documentation of what students have learned and acquired as an end product of the educational process. This documentation requires a comprehensive evaluation of academic programs.

In the University of Dammam, the Department of Health Information Management and Technology (HIMT) at the College of Applied Medical Sciences has recently entered the preparatory stage for accreditation. The HIMT program started in 2003 and up to present only female students have been admitted the bachelor's degree; a four-year program and one year of internship, with a total of 117 credit hours (Appendix 1). This is a unique program within applied medical sciences that demands a compulsory graduation project using data from a real life field. Another feature is that the graduate students of the HIMT program form the link between health workers and the Information Technology (IT) department. They are able to function in the Quality Improvement department, and understand the whole process of Medical Record (MR) and are therefore expected to be competent enough to be a part of electronic medical record project implementation team (more information on HIMT program is provided in Appendix 2).

The main objective of this study was to evaluate the HIMT program, based on the views of both students and faculty.

This study uses one of the approaches for evaluating an educational program, 'Participant-oriented' approach, which explores how the people involved in the program perceive it[16].

Material and Methods

Study Setting

The study was conducted at the Department of Health Information Management and Technology at the College of Applied Medical Science, University of Dammam, Kingdom of Saudi Arabia.

Study Design

A cross-sectional study, during the period between April 1st and the end of May, 2010.

Target population and sample size

The target population was all senior (4th year) HIMT students (N=25) and all full-time faculty members at the HIMT department (N=17). A total of 25 out of 25 surveys were completed by students yielding a 100% response rate, and 16 out of 17 questionnaires were completed by faculty yielding a 94% response rate.

Data Collection Tools

The questionnaires were delivered either personally (self-administered) or through e-mails. Approximately 15-20 minutes were required to complete the questionnaires.

Instrument

Two different surveys were used as the instruments; Student Survey and Faculty Survey, which used mixed approaches to collect both quantitative and qualitative data. The closed-ended questions provided quantitative data, while the open-ended questions asking participants for responses provided qualitative data[18,19]. The statements in each survey have been adapted and or modified from assorted international surveys. In addition, some statements were based on the relevant literature review, informal interviews with some participants, and the booklet 'Learning goals and objectives of HIMT – Course Curriculum' (Appendix 3 for the sources of the statements).

1. ***Student survey***

The Student survey consisted of 50 statements, grouped under 6 subscales which aimed to investigate students' perceptions of their instructor (statements no. 3, 6, 7, 9, 10, 12, 14, 17, 18, 19, 20, 25, 26, 27, 28, 29, 31, 45), learning (statements no. 1, 2, 5, 8, 12, 13, 15, 24, 42), capstone courses (statements no.4, 11, 16, 21, 22, 23, 32), learning resources (statements no. 33, 35, 36,

37, 39), students' cooperation experience (statements no. 34,38,41,43), and supportive learning environment (statements no. 30, 40, 46, 47, 48, 49, 50). The Likert scale used ranged from 1= strongly disagree, to 5= strongly agree (Appendix 4).
In addition to three open-ended questions were added to elicite students' views on what they liked and disliked most in the HIMT program and their recommendations and/or suggestions.

2. ***Faculty survey***
The Faculty survey consisted of 47 statements under 7 sections, which aimed to explore faculty perceptions of the following: (a) the extent to which a variety of means/tools were used to support the learning environment; (b) the level of agreement to faculty-teaching-strategies; (c) faculty-supportive-environment; (d) the effectiveness of specific methods used to collect information on faculty teaching performance; (e) the program resources; (f) the frequency of providing feedback to students; and (g) the actual departmental support for faculty. All of the questions in the above sections were opinion questions with different Likert scales. Finally section (h) consisted of two open-ended questions that elicited faculties' views on aspects of the learning environment that would enhance the delivery of the HIMT program (Appendix 5).

Statistical analysis
A Non-parametric statistical analysis was performed using the Statistical Package for Social Sciences (SPSS, IBM, Chicago, Illinois, USA) version 16. A descriptive analysis was used for the closed-ended questions. The open-ended responses were organized by using basic analysis in order to identify meaningful patterns in the data. The analysis involved the following steps. First, the responses of each participant for a single open-ended question were read, and response emergent categories/themes identified. Second, the responses were classified into one of the categories/themes already identified. Four of the researchers of this study; two for the student survey and other two for the faculty survey, worked individually to sort out the responses into identified categories. This was done to look for any similarities or differences in the sorting. The process was repeated until no major differences were found in sorting out the responses. Third, statements were formulated to reflect the content of all the responses in each category, and the number of responses in each category were counted and reported. Cronbach's alpha coefficient was used to assess the internal consistency of the questionnaire. Spearman rho coefficient was calculated to assess the association between student academic achievement and subscales of their survey. Furthermore, the Microsoft Office Excel Version 2003 was used for graphic presentation of data. A pilot study was conducted with a group of ten juniors (3rd year HIMT students) at the end of their academic year, April 2010, to find out any possible ambiguities in the student survey. The result showed that the survey was clear and that there was no ceiling or floor effect in pilot study.

Results

Student Survey Results

Reliability and Validity of the Student Survey
The results of the Cronbach's alpha values were interpreted using Richardson's suggestion[20]. The Cronbach's alpha coefficient for the overall survey (α=.635) was average to high. The Cronbach alpha for 'Instructor', 'Courses', 'Learning resources', and 'Students cooperation' subscales (α > 0.70) were high to very high. The internal consistency for both the 'Perception of learning' and 'Supportive learning environment' subscales (α = 0.396 and 0.248 respectively) were present but low. An attempt has been made to enhance the reliability of these two subscales by using 'Cronbach's Alpha if Item Deleted' command in SPSS. A considerable change in the alpha coefficients were found after deleting two items from each of the mentioned subscales (α ≈ 0.50 and 0.60 for

supportive learning environment and perception of learning respectively) considered as average to high.

The subscales discriminant validity was conducted by calculating the mean correlation of each of the survey's six subscales with the remaining subscales. The values ranged from -0.22 and 0.39 with an average of 0.19, which can be considered small enough to suggest adequate discriminant validity for each subscale. It appeared that aspects of the survey measured were distinct although slightly overlapping.

Descriptive Analysis of Student Survey Results

There were 25 fourth year HIMT students at the academic year 2009-2010. Their average age was 21 years. Nearly two thirds of the students had a GPA of more than 4.

Table 1 shows the mean score and the standard deviation for each subscale of the student survey. The highest mean score were accorded 'Students cooperation'; followed by 'Supportive learning environ-ment' and 'Perception of learning' subscales (mean= 3.28, 3.24 and 3.23 respectively). Learning resources' had the lowest mean score (mean= 2.272).

The results of descriptive analysis for individual statements of the student survey revealed that the most highly rated statements were no.10 "The instructor made me feel welcome personally in seeking his/her help or advice" and no.49 "The college supports and encourages the student to attend conferences" (mean= 3.56 and 3.84 respectively). The lowest rated statement was no.37 "Performing the exams on the Web-CT was a great experience" and no.39 "A smart board in my class plays an important role in improving the whole educational process" (for both statements the mean = 2.00).

Correlation between Achievement and Subscales of Student Survey

Table 2 shows the correlations between students' GPA and the subscales of student survey. It revealed that there were significant positive correlations between students' GPA and the following: perception of courses (r=0.625, p=0.001), supportive learning environment (r=0.469, p=0.018), and perceptions of learning (r=0.432, p=0.031).

Table 1: Descriptive Analysis for the Subscales of students questionnaire (N= 25).

	Mean	Std. Deviation
Supportive learning environment	3.40	.605
Student cooperation	3.28	.817
Instructor	3.11	.486
Perception of learning	3.10	.497
Courses	2.89	.592
Learning resources	2.27	1.230

Table 2: Correlations between students' GPA and subscales of student survey (N= 25).

Subscales	Correlation Coefficient (r)	*P*. Value
Perception of Courses	.625	.001
Supportive learning environment	.469	.018
Perception of learning	.432	.031
Perception of Instructor	.200	.338
Students cooperation	.128	.542
Learning resources	-.226	.276

Student Open- ended question

What three things do you like most in the HIMT program?

What majority of students liked the most about HIMT program was its uniqueness and its status as the pioneer program/ course in the region. Also 8 out of 25 students liked it because the diversity of the subjects gave them the opportunity to work in different areas of hospitals. In addition, 4 students were pleased with the instructors' cooperation, and the potential job opportunities as HIMT program graduates.

What three things do you dislike most in the HIMT program?

The basic content analysis revealed that nearly half of the students were unhappy with issues related to the campus, computer lab and classes they considered unsuitable and lacked excitement. In addition, one third of the students thought some courses in the HIMT program were irrelevant. Moreover, 7 students reported that the attitude of some instructors made it difficult to relate to theme, some lacked professional teaching skills, all of which contributed to their dislike of HIMT. To a lesser extent, some mentioned the unfamiliarity of the society in general and the hospitals in relation to the scope of HIMT program, the shortage of staff, the lack of library facilities.

Faculty Results

Reliability and Validity of the Faculty Survey

The results of the Cronbach's alpha values were interpreted along the lines suggested by Richardson's[18]. The Cronbach's alpha coefficient for the 'faculty perceptions regarding learning resources' (α=.927), and the 'feedback' (α=.847) subscales were rated high to very high. For both, the 'tools support the learning environment' (α=.618) and the 'actual-departmental-support' (α=.578) subscales the Cronbach alpha were average to high. For the 'teaching strategies', 'departmental means of obtaining information regarding faculty performance', and 'faculty supportive environment' subscales, the Cronbach's alpha coefficients were present but low (α < 0.3). An attempt has been made to enhance the reliability of these three subscales by using 'Cronbach's Alpha if Item Deleted' command in SPSS. A considerable change in the alpha coefficients were found after deleting two to three items from the above mentioned subscales (α ≈ 0.50 for both supportive environment and departmental means to obtain information on faculty performance, while that for teaching strategies was 0.48) which is considered as average to high.

The subscale discriminant validity was supported by calculating the mean correlation of each faculty's seven subscales with the remaining subscales. The values ranged from -0.06 and 0.09 with an average of 0.02, which can be considered as small enough to suggest an adequate discriminant validity for each subscale. It appears that the survey measured distinct although slightly overlapping aspects of the faculty review.

Descriptive Analysis of Faculty Survey Results

Sixteen faculty members participated in this study. Two were male and the rest were female.

On the use various tools to support the learning environment, all faculties reported a good use of power point presentation (100%). This was followed by the full use of email as a communication tool with students (56%). About half of the faculty indicated an occasional use of ordinary white boards. In addition, half of the faculty expressed their desire to deliver their course content online and use Web-CT discussion boards. On other hand, nearly one fifth of them expressed their objection to using both Web-CT discussion boards and Internet for their classes**.**

With regard to teaching strategies, faculty reported higher agreement (mean>4) with the statements dealing with teaching strategies that emphasize students' interaction in class, the use of a variety of visual materials, and face-to- face interaction, they stated that relevant learning materials were more likely to improve students' learning. In addition, they expressed the view that their role was

more of facilitators than content providers. Moreover, they believed that online discussion boards and forums were useful for students' learning (mean=4).

With regard to the 'faculty supportive environment', faculty highly agreed (mean=4.8) with the importance of accessibility of computer technology for students' success. In addition, they believed that all HIMT courses contributed to the development of the skills of a qualified graduate (mean=3.9). Moreover, they were highly pleased with their experience of teamwork at the HIMT department (mean=3.8). They were also satisfied with their service load/assignment and courses assigned to them (mean=3.2). However, they were concerned about the heavy workload and the effects on their teaching (mean=3.8) as well as the little support they had from the institution for the use of technology in their teaching (mean=2.7).

When asked about the 'departments' means of obtaining information on faculties teaching performance', most of the faculty (94%) reported that 'the end-of-semester written evaluations by students' were already in use. This was usually followed by 'faculty-colleague classroom visits and observation' (31%). Nearly half of the faculty indicated their desire to use both 'individual interviews' and 'faculty-colleague classroom visits and observation'. Approximately 60% of the faculty indicated that they were not opposed to 'external evaluators' evaluating/appraising their teaching performance.

Figure 2 shows the mean score of faculty satisfaction with the program's learning resources. The highest mean score was accorded to the accessibility of the computer lab. However, mean scores of all program resources were low (mean < 3).

In response to the question of the frequency of providing students with a feedback **(Table 3)**, 56% of the faculty indicated that it was very frequent (e.g. presentation, homework, course work, etc). Approximately 44% of the faculty provided feedback very frequently on their exams. On students' acquisition and development of the competencies, 43.8% of the faculty frequency on feedback was average. Also, 62% indicated that they very frequently encouraged students to work in teams in almost every class.

In answer to the question of the actual departmental support **(Table 4)**, almost 40% of faculty reported that there was moderate integration among their courses. They added that the department encouraged them to use technology to augment the courses offered and student learning. Half of the faculty expressed their appreciation for faculty collaboration in the design and delivery of their course as 'moderate'. In addition, one-fourth of the faculty indicated that the extent to which formal assessment and evaluation processes were used to gather information in support of curriculum improvement was 'great'.

On the other hand, nearly 40% of the faculty pointed out the inadequacy of help the department gave in making them aware of the educational outcome assessment processes and their use in the classroom through workshops and seminars. They also felt that departmental support to establish a formal program to serve the needs of students with different backgrounds and learning styles was largely absent. Nearly one-third of faculty indicated that the help the department gave in terms of regularly scheduled programs and workshops on new teaching methods and innovations to help their growth and development was inadequate.

Faculty Open-ended questions

Is there anything else the University should do to assist in the delivery of this program?

The results revealed that one-third of the faculty felt that the faculty development program should be improved by giving more opportunities to attend conferences and workshops in their field as an important means of assisting the delivery of this program. Nearly one-fifth of the faculty mentioned that the curriculum should be modified to include elective courses and community service. To a lesser extent, learning resources, such as the adoption of new technologies in teaching, upgrading of the computers in classroom with the latest

software and antivirus program were mentioned.

Please make any other comments or suggestions you deem necessary

Only three faculties made comments stressing that "instructors should be given the freedom to select the required textbooks".

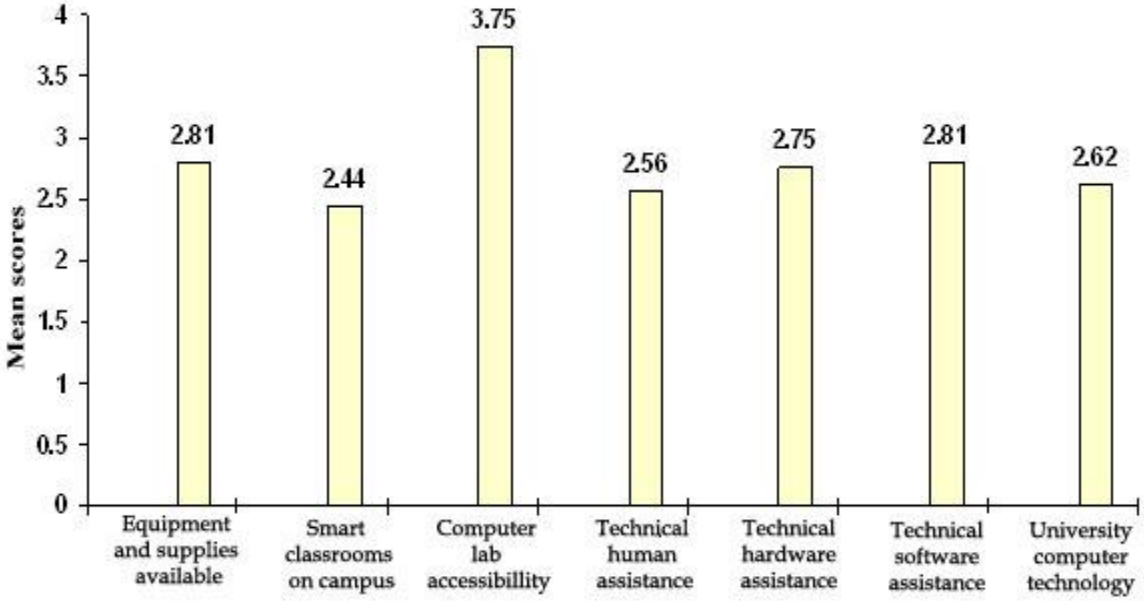

Figure 1: *The mean score of faculty satisfaction with program learning resources.*

Table 3: Descriptive analysis of faculty feedback and their frequent in practicing student' in group work (Likert scale ranged from 0%=Not at all to 100%=Every class).

Statements	Not At all (0%)	Infrequently (20%)	Average Frequency (50%)	Very Frequently (70%)	Every Class (100%)
How frequently did students in your courses work in teams or groups on projects and assignments?	0	25.0	12.5	50.0	12.5
How frequently did you provide feedback to the students on their acquisition and development of the competencies?	0	18.8	43.8	31.3	6.3
How frequently did you provide feedback to the students on their exam results?	12.5	12.5	6.3	43.8	25.0
How frequently did you provide feedback to the students on their course assignments (presentation – homework – course' work…	0	18.8	6.3	56.3	18.8

Table 4: Descriptive analysis of faculty perception regarding the actual departmental support.

Statements	Not at all	To a limited extent	To a moderate extent	To a Great Extent	To a Very Great Extent
To what extent were your courses integrated with at least one other courses	0	12.5	37.5	18.8	31.3
To what extent did you collaborate with other faculty members in the design and delivery of your courses?	6.3	12.5	50.0	18.8	12.5
To what extent have you applied formal assessment and evaluation processes to gather information to support curriculum improvement?	18.8	18.8	18.8	25.0	18.8
To what extent your department help to increase your awareness of educational outcome assessment processes and their use in the classroom through workshops, seminars, and information	12.5	37.5	18.8	18.8	12.5
To what extent did your department offer regularly scheduled programs and workshops on new teaching methods and innovations in support of faculty development?	25.0	31.3	31.3	12.5	0
To what extent did your department establish formal programs to serve the needs of students with different backgrounds and learning styles?	25.0	37.5	12.5	25.0	0
To what extent did your department encourage and support (training, information, etc.) you to use technology to augment your course offerings and student learning	12.5	18.8	43.8	18.8	6.3

Discussion

Reliability of surveys

The results of reliability (if item deleted) and subscale discriminant validity of both student and faculty surveys indicate satisfactory internal consistency reliability and subscale discriminant validity.

Discussion for student survey

In this study, students were more positive than negative about their instructors in terms of 'instructors' personal characteristics' such as being good listeners, having good rapport with students, setting good example and being open minded. In addition, they were satisfied with 'instructors' professional features' such as their cooperation with students, provision of clear information, and being available whenever needed. On the other hand, they were dissatisfied with their instructors' feedback and teaching style. The last two factors as well as positive personal attributes of an instructor can enhance students' learning and positively influence their academic achievement[21-23].

With regard to their experience of team work, students were more positive than negative about working in a team, and having effective discussions, support and encouragement. It has been hypothesized that students' cooperative learning experiences encourage higher achievement than individualized learning experience[24]. However, the result of this study showed no statistical significant correlation between the dimension of students' cooperation and

their achievement (GPA), a finding consistent with the earlier finding of Abu and Jim [25].

The results showed that students were satisfied with their supportive learning environment where they were given the chance to attend conferences to broaden their knowledge. There was total satisfaction with the HIMT program. In addition, they had a neutral view on the clarity of the procedure for evaluating graduation project. However, they were unhappy with the arrangement of classes and exam timetables.

Students were satisfied with their learning subscale. This is the result of their familiarity with the HIMT goals, ability to achieve their goals throughout the course, their comprehension of their learning responsibilities, and the conformity of the course procedures and assignments to the course objective.

The results of the capstone courses showed that students had little appreciation for their capstone courses. Their dissatisfaction was with the following: (a) the course preparation and coordination, such as availability of required materials and places to work in the referee hospital; and (b) the effort and time demanded for its study.

The results on learning resources revealed that students were not very pleased with this subscale. The ineffective use of both 'Web-CT'; and the smart board elicited similar responses. A possible explanation (according to an informal interview with some students) might be the problems students actually experienced, and their disappointment and frustration when they used Web-CT in one of their exams. In addition, the inability to use the new smart boards properly in the classrooms has resulted in their being disabled and removed by the department. This could explain the lower mean scores of students' satisfaction with the learning resources in their department. Moreover, since university students at Kingdom of Saudi Arabia receive a monthly stipend, most have personal lab-tops that have up-to-date software (for example windows 2010). Therefore, they are frustrated when they have to work in the university computer lab with old-out of date software (for example Expo, window 2003).

The correlation analysis showed a significant positive correlation between student academic achievement, grade point average (GPA) and the following three subscales: student perception scores in learning, supportive learning environment, and courses. Student who scored high on the three subscales had higher grade point average than their counterparts who scored low on the above subscales/dimensions. These positive associations between academic achievement and perception of learning environment is in accordance with the finding by Pimparyon et al[26-29].

The analysis of individual statement showed higher standard deviation (≥1) on statements (23 out of 50 statements) relating to the learning resources such as smart board and web-CT, feedback, examination timetable, and the extent of rapport with instructor. This result might indicate a wide spectrum of students' views on these issues. One possible cause for this range might be students' individual characteristics. Some students came from public high schools, while others were from private and or international schools. Some were fluent in English while others were average and were still struggling with English (which is the medium of instruction). This heterogeneity of the student group might reflect the diversity of their views.

The basic content analysis of the open-ended questions revealed three main positive and three negative themes from students' responses. The positive ones arising from what students liked most about HIMT involved their recognition of the uniqueness of the HIMT program and its being the first program in the region, the multidimensional aspect of the program, and the future job opportunities for graduates of the HIMT. On the other hand, the three negative themes about HIMT that emerged were the inferior quality of learning sources in the classes and the outmoded hard and software in the computer lab, inappropriateness of some courses, and of some instructors' ineffective teaching skills.

Discussion of Faculty Survey

"The well being of the university depends on its ability to recruit and retain a talented professorate. Our national well-being depends on our ability to develop a happy, emotionally healthy, and productive next generation" [30].

The results indicate that the faculty were satisfied with the accessibility of the computer lab, but were displeased with the learning resources both in and outside the computer lab. These included the university computer technology, technical hardware/ software and human assistance, smart classrooms, and the availability of equipment and supplies. The dissatisfaction with the university computers might be because of the dated system used (e.g. expo, old Microsoft 2003, as antivirus software). In order to derive the full benefits of teaching, faculty should be provided with the necessary facilities to make them function properly.

The literature highlights the importance of perceived organizational support in attaining high job satisfaction. This refers to the extent to which workers/staff perceive their boss/manager's concern for their wellbeing and their regard for their contributions to the organisation[31]. Earlier studies have showed that staff whose perception of organizational support is high attain higher job satisfaction[32].

In this study, although faculty appreciated the support of their department in creating a healthy environment of collaboration among faculties, they were less positive about organization of workshops and training for faculty development, and dissemination of information on innovations in teaching and learning. These negative perceptions affect faculty satisfaction with their department. The literature hypothesized that in general, work-related attitudes including the degree of satisfaction, have behavioral consequences such as changes in the quality of performance[33]. A congenial environment in the department is important for it to function smoothly.

It is interesting to note that although faculty believed that online discussion boards enhanced students' learning, about one-fifth of them objected to using these tools in their classes. This may arise out of the limited departmental support in facilitating this teaching approach, and in organizing workshops to train faculty about online teaching methods in order to eliminate the phobia of the use of new technology in teaching and learning. There was also the problem of unavailability of specialized IT staff to support faculty when teaching online and give assistance when necessary.

Shea et al emphasized that technical as well as support are significantly related to faculty satisfaction in online teaching[34].

Literature emphasize an allowance/ incentive could be given to the faculty to encourage them to adopt online teaching. They could be also be relieved of administrative work since considerable effort and time are required for the preparation of this mode of teaching[34-36]. Workshops could be organized on how to design and implement online courses to instill confidence in the use of new-technology in teaching.

The results of a basic content analysis of open-ended questions revealed three themes from faculty responses. First, the faculty development program could be improved to include a wide range of activities including attendance at conferences. Second, available learning resources should be upgraded to use the state of the art technology in teaching and learning. Finally, faculty stressed the need to incorporate community services into students' learning. This would confirm with Wilson and Berni's view that a good integration of academic and social work and practice is necessary for the formation of well-rounded students competent to face the challenges of the work place[37].

Conclusion

It has been shown that most students were satisfied with the clarity of HIMT goals and students' team spirit. However, they were dissatisfied with the learning resources, frequency, and quality of instructors' feedback. Faculty frequently provides feedbacks to students, and encourages student group work. However, they

complained about the little help the department gives to improve faculty effectiveness and the lack of learning resources. They would also like to explore new departmental modes of obtaining information on their teaching performance.

Although the results of this study show that faculty frequently provided feedback to students, students were unhappy with their quality. Both students and faculty agreed on the inadequacy of good learning resources.

Recommendations

The study recommends that Management of the College of Applied Medical Sciences should set up a center/unit for a program of continuous assessment to serve its different department; broaden faculty development programs/activities with seminars/work-shops on teaching strategies and ways of improving skills in the use of technology in their classroom. All stakeholders should be involved in the workshops on program assessment. Also a standard assessment should be formulated to reflect the learning objectives and goals of the HIMT program, as well as the required competencies that graduate students are expected to possess. In addition, it is recommended that the final semester of the HIMT program be reserved for the conduct of graduation project by students together with training sessions on scientific research methodology and the design of questionnaires and instruments.

Second, learning resources centers such as the library should be provided and computer laboratories expanded to accommodate students from the different disciplines.

Third, it is also recommended that a public relations group be established, for the HIMT program, with a variety of membership such as: (a) faculty from the HIMT department, (b) representatives from health ministry, and (c) a HIMT student representative. In addition, a sample of the HIMT graduation project should be published in national and international events, national workshops, conferences, in order to raise the public awareness of the HIMT Program.

Fourth, the coordinator of University Student Academic Affairs should update the curricula clearly determine the goals of the 'Capstones courses'; and design a specific job title for the HIMT graduates.

Fifth, the physical facilities of the HIMT should be improved with modern workshops; a wireless network using an ID as the password, and a computer lab with up-to-date hardware with antivirus.

Finally, it is recommended that the college administration should create a focus –group to conduct further studies on a needs assessment of both students and faculty to improve the learning environment and thus provide HIMT students the quality of education they require for their future practice.

This study was limited to fourth year students who studied the capstone courses offered in this program. Furthermore, the study was conducted on only one program at one college, in the Kingdom of Saudi Arabia. Generalization could be limited to other colleges with similar characteristics.

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Appendix 1: The Required courses and the number of credit hours (Year 2008).

FIRST YEAR – FIRST SEMESTER			FIRST YEAR – SECOND SEMESTER		
Course Title	**Symbol**	**Credit Hours**	**Course Title**	**Symbol**	**Credit Hours**
Gen. and Scientific English	DEFL 101	6	English Study Skills	DEFL 201	2
Islamic Culture	DEIC 101	2	Islamic Creed and Ethics	DEIC 251	2
Introduction to Biology	MSBI 104	2	Biology	MSBI 125	4
Learning Skills	MSCH 106	2	Chemistry	MSCH 126	4
			Physics	MSPH 127	4
	Total	12		Total	16

SECOND YEAR – FIRST SEMESTER			SECOND YEAR – SECOND SEMESTER		
Course Title	**Symbol**	**Credit Hours**	**Course Title**	**Symbol**	**Credit Hours**
The Economic System Islam	DEIC 351	2	Political System in Islam	DEIC 404	2
Basic Biostatistics	MSCH 211	2	System Analysis and Design-I	MSCH 221	3
Principles of Health Care Management	MSCH 212	3	Health Data Content and Structure	MSCH 223	2
Computer fundamentals in Health care	MSCH 213	4	Introductory Epidemiology	MSCH 224	2
Intro To HIMT	MSCH 214	2	Healthcare Database Administration	MSCH 225	3
Introduction to Anatomy	MSAT 215	3	Behavioral Science	MSPY 226	2
	Total	16		Total	14

THIRD YEAR – FIRST SEMESTER			THIRD YEAR – SECOND SEMESTER		
Course Title	**Symbol**	**Credit Hours**	**Course Title**	**Symbol**	**Credit Hours**
Health Data Classification and Coding System – I	MSCH 311	4	Health Data Classification and Coding System – II	MSCH 321	4
System Analysis and Design-II	MSCH 314	2	Health info. Management in Acute Care	MSCH 325	3
Health Care Delivery System	MSCH 315	2	Professional Practice Experience- I	MSCH 326	2
Fundamentals of Human Diseases –I	MSCH 316	2	Quality Improvement in Health Care	MSCH 327	3
Intro. To Health Information Applications	MSCH 317	4	Fundamentals of Human Diseases -II	MSCH 328	3
	Total	14		Total	15

FOURTH YEAR – FIRST SEMESTER			FOURTH YEAR – SECOND SEMESTER		
Course Title	**Symbol**	**Credit Hours**	**Course Title**	**Symbol**	**Credit Hours**
Research Methodology	MSCH 411	3	Professional Code of Ethics	MSCH 421	1
Health info. Management in non Acute Care	MSCH 413	3	Health Economics	MSCH 423	3

Legal Aspects and Ethics of Health Information	MSCH 414	2	Graduation Project	MSCH 424	6
Analytical Biostatistics	MSCH 415	3	Human Resource Management	MSCH 425	2
Professional Practice Experience - II	MSCH 417	4	Computer Networks	MSCH 426	3
	Total	15		Total	15

Total credit hours: 117

Appendix 2: Background Related to Department of HIMT- Course Curriculum (2008)
Scope of Health Information Management and Technology (HIMT).

The HIMT is concerned with planning, collecting, storage, retrieval, and dissemination of health data towards quality health services. Along with the advances and innovations taking place around the world in all disciplines especially in the field of information, the need for highly qualified personnel in the field of HIMT has been increasing. The HIMT program aims at graduating technical and executive experts in Health Information technology to be able to:

1- Plan, implement, and evaluate information systems towards full integration between traditional and new information systems.

2- Manage health information through:
- Storage and retrieval of medical data.
- Qualitative and quantitative analysis of medical records.
- The use of the international coding of diseases.
- Design of medical formats and indices manually or electronically.
- Design of statistical report formats.

3- Assist in designing efficient health information systems at health facilities by planning and implementing:
- Objectives for Health Information Systems.
- Policies for Health Information Systems.
- Procedures for quality Health Information Systems.
- Internal and external coordination between health organizations.
- Human and non-human resources for Health Information Systems.
- Security plans for Health Information Systems.
- Emergency plans for Health Information Systems.

4- Coordinate with the health team to :
- Achieve criteria for valid and reliable health information.
- Achieve maximum gain from computer applications to meet managerial and clinical need.
- Undergo health systems research.
- Train health team members on the utilization of health systems.

Program Objectives

The HIMT program aims at promoting the resources of health information at health settings by:

1- Educating and training candidates in the field of Health Information Management and Technology with the aid of lectures, practical applications in computer laboratories and information management departments at different health facilities.

2- Promoting communication skills among candidates to be able to perform effectively within the health system.

3- Clarifying the importance of Health Information Management and Technology as an essential component for health service delivery.

4- Expanding career opportunities for graduates through the cooperation with other universities and health organizations in the region.

5- Developing and implementing a continuous education program for promoting graduates.

Appendix 3: Breakdown of sources of each survey.

Student Survey	
Source	**Statement number**
Developed by the authors	1, 2, 7, 8, 9, 13,16, 25-28, 32-33, 35-37, 39, 40, 44-50
Adopted from: Participant Evaluation of Instructor and Program Quality (PEIPQ)[38]	3-6, 10-12, 14-15, 17-24, 29-31, 34, 38, 41-43
Faculty Survey	
Developed by the authors	A2, A4, A5, A7, B11, B13, B14, D4-6, F2
Adopted from ELI Students/Faculty Questionnaire[39]	A1, A3, A6, B1-10
Adopted from Faculty Questionnaire for Undergraduate Program Review[40]	B12, C1-5, D1-3, D7, F1
Adopted from Polytechnic University 'Faculty survey'[41]	E1, E7
Adopted with some modification from Polytechnic University 'Faculty survey'[41]	E2-6, E8-11

Appendix 4: The Student Survey.

Please indicate your views regarding your capstone courses (such as: Intro. to HIMT, Health Data Content and Structure, Professional Practice Experience- I and II, Health information Management in Acute and non Acute Care and Intro. to Health Information Applications) on a scale from 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Neutral (N), 4 = Agree (A), 5 = Strongly Agree (SA).

N	**Statement**	**SD**	**D**	**N**	**A**	**SA**
1	I am very familiar with the goals of HIMT program	1	2	3	4	5
2	The course assignments sustain the objectives of the course.	1	2	3	4	5
3	Instructor was always efficient and well-organized.	1	2	3	4	5
4	Course materials were well prepared and carefully explained.	1	2	3	4	5
5	I have learned and understood the skills and topics that were in the course.	1	2	3	4	5
6	The instructor worked well with the student group.	1	2	3	4	5
7	The instructor gave me adequate feedback on my performance (i.e. reports and presentation)	1	2	3	4	5

N	Statement	SD	D	N	A	SA
8	The feedback that I received from my instructor enabled me to learn from my mistakes and improve my skills	1	2	3	4	5
9	The instructor provided me with useful feedback	1	2	3	4	5
10	The instructor made me feel welcome personally in seeking his/her help or advice	1	2	3	4	5
11	The course was valuable for my personal growth and development	1	2	3	4	5
12	The instructor's actions and decisions were fair and Just.	1	2	3	4	5
13	The student's learning responsibilities and requirements were clear	1	2	3	4	5
14	The instructor showed a good understanding of how I was cop course.	1	2	3	4	5
15	I gained satisfaction and a sense of achievement throughout the cour	1	2	3	4	5
16	The course was well-organized and coordinate in terms of (transport availability of required materials and places to work)	1	2	3	4	5
17	The instructor gave information and explanations in a clear and ur way	1	2	3	4	5
18	The instructor always set a good example for us to follow	1	2	3	4	5
19	The instructor had a good and effective teaching style.	1	2	3	4	5
20	The instructor worked well with the group.	1	2	3	4	5
21	The course was worth the effort that took me to do it.	1	2	3	4	5
22	The course was worth the time involved to do it.	1	2	3	4	5
23	I found the course challenging and stimulating.	1	2	3	4	5
24	I achieved what I wanted to get out of the Course.	1	2	3	4	5
25	The instructor was available to me when I needed.	1	2	3	4	5
26	The instructor supported the students to work out their own proble	1	2	3	4	5
27	The instructor was a good counselor.	1	2	3	4	5
28	The instructor was a good listener	1	2	3	4	5
29	The instructor handled group problems effectively.	1	2	3	4	5
30	I could talk openly and easily with the instructor.	1	2	3	4	5
31	Overall, I think that the instructor was excellent.	1	2	3	4	5
32	Overall, the course was valuable	1	2	3	4	5
33	The Web-CT helps in the development of education	1	2	3	4	5
34	The group worked well as a team throughout the course	1	2	3	4	5
35	I can log on the Web-CT and communicate with the instructor easily	1	2	3	4	5
36	I can download materials and references on the Web-CT easily	1	2	3	4	5
37	Performing the exams on the Web-CT was a great experience.	1	2	3	4	5
38	The group members cooperated and shared responsibilities very well with each other during the course	1	2	3	4	5
39	A smart board in my class plays an important role in improving the whole educational process	1	2	3	4	5
40	Attending conferences broaded my knowledge and information.	1	2	3	4	5
41	Group discussions were useful and productive	1	2	3	4	5
42	I became fully involved and contributed well throughout the course.	1	2	3	4	5
43	I got a lot of help, support, and encouragement from the group.	1	2	3	4	5
44	The lecturing and other experiences in the first health informatics forum in Scitech Center were very beneficial	1	2	3	4	5
45	The instructor provided me with sufficient information about the expected tasks and due date for submitting assignments in advance.	1	2	3	4	5
46	There is an implemented/flexible strategy when change or adopting any new technique (e.g. convert from multiple choices questions to essays).	1	2	3	4	5
47	Class and exams timetables were arranged in an organized way.	1	2	3	4	5

N	Statement	SD	D	N	A	SA
48	The procedure for assessing graduation project is clear for me.	1	2	3	4	5
49	The college supports and encourages student to attend conferences.	1	2	3	4	5
50	I am totally satisfied with HIMT program.	1	2	3	4	5

Finally, please answer the following questions:

(1) What are the three things you like most in the HIMT Program?
(2) What are the three things you dislike most in the HIMT Program?
(3) Is there any recommendation or suggestions you would like to add?

Appendix 5: The Faculty Survey.

Section A: Please indicate your opinion regarding the extent of using the following means/technologies that support the learning environment by using this scale:						
N	**Statements**	**Fully using it now**	**Occasionally use it**	**Would like to use it**	**Don't want to use it**	**N/P**
A1	Communication with students via email					
A2	Power point presentation in class					
A3	Internet in class					
A4	Using the ordinary white boards in the class					
A5	Online discussion boards (Web-CT)					
A6	Delivery of most course content online					
A7	Student self-learning					

Section B: Please select the best response for each of the following statements using this scale: Strongly Disagree=1, Disagree=2, Neither=3, Agree=4, Strongly Agree=5						
N.	Statements	1	2	3	4	5
B1	In order to learn best, students need face-to-face contact with an instructor.					
B2	Students are only interested in course material that is relevant to real life.					
B3	Students learn best when there is a variety of visual material presented in class.					
B4	Instructor-student interactions in class do not improve student learning.					
B5	Online discussion boards and forums are not useful in student learning.					
B6	Resources on the Internet do not make a good replacement for faculty.					
B7	Resources on the Internet have greatly decreased students' need to go to the library.					
B8	Having access to computer technology is very important for students' academic success.					

B9	My institution provides very good support for my present use of technology in teaching.					
B10	I welcome changes that would allow me to be more of a guide to students and less of a content provider.					
B11	All core courses contributed to the development of essential learning skills that are necessary for graduate a qualified student.					
B12	Faculty work together to get the program "work" done					
B13	Faculty satisfied with service load and courses that are given to them					
B14	Workload will affect the delivery of courses.					

Section C: The department obtains information regarding your teaching performance (Already in use=1, Would like to use=2, Do not using it=3)				
N.	statements	1	2	3
C1	End-of-semester written evaluations by students			
C2	Chairperson classroom visits and observations			
C3	Faculty colleague classroom visits and observations			
C4	External evaluators			
C5	Individual interviews			
C6	Other (please specify):			

Section D: Please indicate to what extent you are satisfied with program learning resources (using the following scale: Unsatisfactory to a great extent=1, Unsatisfactory=2, Neutral =3, Satisfactory=4, Great satisfactory=5)						
N.	statements	1	2	3	4	5
D1	The equipment and supplies available.					
D2	Smart classrooms on campus.					
D3	Computer lab accessibility.					
D4	Technical human assistance.					
D5	Technical hardware assistance.					
D6	Technical software assistance.					

Section E: Part I: Please indicate your opinion regarding the frequency of the following statements (Not at all= 0%, Infrequently=20%, Average Frequency=50%, Very Frequently=70%, Every Class=100%).						
N.	statements	0%	20%	50%	70%	100%
E1	How frequently did students in your courses work in teams or groups on projects and assignments?					
E2	How frequently did you provide feedback to the students on their acquisition and development of the competencies?					
E3	How frequently did you provide feedback to the students on their exam results?					
E4	How frequently did you provide feedback to the students on their course assignments (presentation – homework – course' work…					

Part II: Please indicate your opinion regarding the extent of the following statements (Not at all=1, To a limited extent=2, To a moderate extent=3, To a great extent=4, To a very great extent=5).						
N.	Statements	1	2	3	4	5
E5	To what extent were your courses integrated with at least one other courses.					
E6	To what extent did you collaborate with other faculty members in the design and delivery of your courses?					
E7	To what extent have you applied formal assessment and evaluation					

	processes to gather information to support curriculum improvement?					
E8	To what extent does your department help to increase your awareness of educational outcome assessment processes and their use in the classroom through workshops, seminars, and information					
E9	To what extent did your department offer regularly scheduled programs and workshops on new teaching methods and innovations in support of faculty development?					
E10	To what extent did you establish formal programs to serve the needs of students with different backgrounds and learning styles?					

Section F: Please answer the following questions:

F1. Is there something else the University should know in order to assist in the delivery of this program? For example: admission requirements, graduation requirements, general education, the curriculum in the major, specific course offerings, faculty development opportunities, assessment support, personnel policies, physical facilities, or the working environment?

F2. Please write down any note regarding anything we have ignored to ask in this survey